



# Fields & Keys

## WV K-12 Education Problem

### Topics

- Determine appropriate field types
- Select primary and composite keys
- Identify appropriate table relationships

### Background Information

This project includes information on West Virginia K-12 schools from 2012 to 2020.

### Instructions

**IMPORTANT:** This assignment requires the Windows version of Microsoft Office.

**IMPORTANT:** Complete the steps below in the order they are given. Completing the steps out of order may complicate the assignment or result in an incorrect result.

1. Download and extract the provided Data Files ZIP file. It contains the following file for use in this assignment:
  - a. **education\_ppfk\_wvkep.accdb** – Information on West Virginia K-12 schools [1], [2].

<b>Table: <i>Districts</i></b>		
<b>Field Name</b>	<b>Type</b>	<b>Description</b>
<b>District</b>	Short Text	Primary key. Name of the school district.
<b>Region</b>	Short Text	Region where the school district is located.

<b>Table: <i>DistrictStatistics</i></b>		
<b>Field Name</b>	<b>Type</b>	<b>Description</b>
<b>District</b>	Short Text	Part of composite key. Name of the school district.
<b>SchoolYear</b>	Short Text	Part of composite key. School year for the data.
<b>Population</b>	Short Text	Population of the school district.
<b>DropoutRate</b>	Short Text	Percentage of students who dropped out of school in the school district.



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## WV K-12 Education Problem

<b>Table: Schools</b>		
<b>Field Name</b>	<b>Type</b>	<b>Description</b>
<b>SchoolID</b>	Short Text	State-assigned identifier for the school.
<b>SchoolName</b>	Short Text	Name of the school.
<b>County</b>	Short Text	County where the school is located.
<b>Closed</b>	Short Text	If yes, school is closed as of 2020-2021 school year.

<b>Table: SchoolStatistics</b>		
<b>Field Name</b>	<b>Type</b>	<b>Description</b>
<b>ID</b>	AutoNumber	Primary key. Unique identifier for the school statistics.
<b>SchoolID</b>	Short Text	State-assigned identifier for the school.
<b>SchoolYear</b>	Short Text	School year for the data.
<b>ManagingDistrict</b>	Short Text	Name of school district that manages the school.
<b>GradesServed</b>	Short Text	Grades served by the school.
<b>SchoolTypeAbbrv</b>	Short Text	Abbreviation of the school type.
<b>Enrollment</b>	Short Text	Number of students enrolled in the school.
<b>AttendanceRate</b>	Short Text	Average daily attendance rate for the school.
<b>GraduationRate</b>	Short Text	For high schools, percentage of students who has received a regular diploma in four years.
<b>StudentsTested</b>	Short Text	Number of students who took state proficiency tests.
<b>MathProficiency</b>	Short Text	Percentage of students that tested proficient in math.
<b>ReadingProficiency</b>	Short Text	Percentage of students that tested proficient in reading.

<b>Table: SchoolTypes</b>		
<b>Field Name</b>	<b>Type</b>	<b>Description</b>
<b>SchoolTypeAbbrv</b>	Short Text	Primary key. Abbreviation of the school type.
<b>SchoolTypeName</b>	Short Text	Name of the school type.

<b>Table: AnalysisQuestions</b>		
<b>Field Name</b>	<b>Type</b>	<b>Description</b>
<b>QuestionNumber</b>	Short Text	Primary key. Question being answered.
<b>Response</b>	Short Text	Response to the analysis question prompt.

- Open the **education\_ppfk\_wvkep.accdb** database in Microsoft Access.



### Determine appropriate field types

3. For a database to be effective and efficient, each field must use an appropriate data type for the information it will store. While you can store everything as text, you will be very limited when writing formulas, specifying criteria, and sorting data.

For each of the tables below, evaluate each field and the data it is intended to store. Specify appropriate field types for all fields.

**NOTE:** You cannot set the *AutoNumber*-type on a field which already contains data. Use the *Number*-type field instead.

**HINT:** Attempt to run each query after you have completed setting the field types. If you are unable to run a query, that is an indicator you have specified an incorrect field type.

- a. *AnalysisQuestions*
- b. *Districts*
- c. *DistrictStatistics*
- d. *Schools*
- e. *SchoolStatistics*
- f. *SchoolTypes*

### Select primary and composite keys

4. Each table must have a key, a value which can uniquely identify each record in the database. No two records can have an identical key value.

In cases where the value of a single field can uniquely identify each record, you can select that single field to serve as a primary key. In cases where no single field can uniquely identify each record, you can combine multiple fields into a composite key.

For each of the tables below, specify an appropriate primary or composite key:

- a. *AnalysisQuestions*
- b. *Districts*
- c. *DistrictStatistics*
- d. *Schools*
- e. *SchoolStatistics*
- f. *SchoolTypes*



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### Identify appropriate table relationships

5. The power of relational databases like Microsoft Access comes from the ability to relate pieces of data in different tables to one another. We must identify appropriate relationships for the tables which contain related data in this database.

Identify and create the relationships appropriate for the tables in this database. Some relationships may involve multiple fields. Enable referential integrity when creating relationships. If you cannot create a relationship with referential integrity enabled, that is a sign you either have an incorrect field type specified or are attempting to create the relationship between incorrect fields.

**NOTE:** The *AnalysisQuestions* table is not related to any other table. It will not be involved in any relationships.

**HINT:** When creating relationships involving multiple fields, the order in which the tables were selected in specifying the relationship matters. If you cannot create the relationship at first, try reversing the order of the tables.

6. Run the Compact and Repair Database utility on your database. Ignore any errors you receive when running the utility

### Grading Rubric

This assignment is worth 8 points. It will be graded by your instructor using this rubric:

Standard	Meets Requirements (8 points)	Does Not Meet Requirements (0 points)
Student made reasonable effort in correctly completing assignment.	Assignment is at least 70% complete and correct, or student contacted instructor for help on incorrect or incomplete items.	Assignment is less than 70% complete and correct, and student did not contact instructor for assistance on incorrect or incomplete items.

This rubric will be used for peer evaluation of this assignment:

Standard	Excellent	Satisfactory	Needs Improvement
Assignment is correct and complete.	Assignment is at least 90% complete and correct.	Assignment is 70%-89% complete and correct.	Assignment is less than 70% complete and correct.



## References

- [1] "ZoomWV Data Dashboard," *West Virginia Department of Education*. Available: <https://zoomwv.k12.wv.us/>.
- [2] "County Population Totals: 2010-2019," U.S. Census Bureau, Washington, DC, Jun. 2020. Available: <https://www.census.gov/data/datasets/time-series/demo/popest/2010s-counties-total.html>.